

Revision of Petrocosmea.

BY

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THE genus *Petrocosmea* was originally described by Oliver * in 1887 from Dr. Henry's Ichang collections. Eight years later Hemsley † added another species—*P. grandiflora*—which was collected at Mengtze by Hancock. These two species—*P. sinensis* and *P. grandiflora*—agree in the lobing of the corolla limb. Although the limb is distinctly bilabiate, yet the five lobes are of subequal dimensions. In 1899 Hemsley ‡ added two more species—*P. iodoides*, collected at Mengtze by both Hancock and Dr. Henry; and *P. minor*, collected also at Mengtze by Hancock. In these two species the posticous lip is very much shorter than the anticous, and for their reception Hemsley created a new section which he called *Anisochilus*. In 1911 two species were added by Léveillé §—*P. Cavaleriei* and *P. Martinii*,—both from Kouy-Tcheou, and in 1915 the same author || described *P. Mairei* from Maire's Yunnan plants. In 1918 the present writer ¶ described another Mengtze species—*P. Henryi*. At this time the genus was confined to Hupeh, Kouy-Tcheou, and Yunnan, but last year the genus was recorded ** from N. Siam, where Dr. Kerr collected *P. Kerrii*. Thus at the present time the genus consists of 9 species—8 Chinese and 1 Siamese. In this contribution six more species are added—all from China.

KEY TO THE SPECIES.

Lips of corolla of subequal length, the posticous not clasping the style
 (§ *Eupetrocosmea*, Craib.)

Filament and connective hirsute	I. <i>P. grandiflora</i> .
Filament and connective glabrous.	

* Oliver in Hook., Ic. Pl., xviii, t. 1716 (1887).

† Hemsley in Hook., Ic. Pl., xxv, t. 2410 (1895).

† Hemsley in Hook., Ic. Pl., xxvi, tt. 2599, 2600 (1899).

§ Lévl. in Fedde Rep. Nov. Sp., ix, p. 329 (1911).

|| Lévl. in Bull. Acad. Geogr. Bot., 1915, p. 24.

¶ Craib in Notes Roy. Bot. Gard. Edin., x, p. 216 (1918).

** Craib in Kew Bull., 1918, p. 365.

- Calyx segments nearly glabrous on back at flowering time, ciliate on margin 2. *P. oblata*.
- Calyx segments pilose on back at flowering time.
- Midrib and lateral nerves conspicuous below, broad and rather densely covered with patent white hairs 3. *P. nervosa*.
- Midrib and lateral nerves not conspicuous or only occasionally subconspicuous below.
- Leaves up to 4.5 cm. long 4. *P. flaccida*.
- Leaves up to 3 cm. long 5. *P. sinensis*.
- Anticous lip decidedly longer than posticous, the latter clasping the style (§ *Anisochilus*, Hemsl.)
- Filament glabrous.
- Anthers almost 5 mm. long, exerted; leaves mostly coarsely and regularly few-toothed, cuneate at base, up to 2 cm. long 6. *P. Henryi*.
- Anthers under 2 mm. long, included; leaves entire, crenulate or shallowly toothed, membranous, up to 3 cm. long, cuneate to cordate at base.
- Style shortly pubescent on the lower part 7. *P. Forrestii*.
- Style with very long silky hairs on the lower part.
- Anthers about 0.6 mm. long, broader than long 8. *P. Cavaleriei*.
- Anthers 1-1.5 mm. long, longer than broad 9. *P. barbata*.
- Filaments not glabrous.
- Leaves up to 10 cm. long 10. *P. Kerrii*.
- Leaves up to 3 cm. long.
- Filaments about twice as long as anthers, which are under 1 mm. long.
- Calyx segments about 3 mm. long, filaments straight 11. *P. Mairei*.
- Calyx segments about 4 mm. long, filaments curved towards apex 12. *P. minor*.
- Filaments slightly longer or shorter than anthers or about half as long as anthers, the anthers being at least 2.5 mm. long.
- Anther twice as long as filament 13. *P. Duclouxii*.
- Anther subequal to filament.
- Leaves up to 2 cm. long, mostly elliptic to rounded-ovate; calyx about 4 mm. long 14. *P. Martinii*.
- Leaves up to 3 cm. long, mostly ovate to elliptic-ovate; calyx about 6 mm. long 15. *P. iodoides*.

ENUMERATION OF THE SPECIES.

1. *P. grandiflora*, Hemsl. in Kew Bull., 1895, p. 115; id. in Hook., Ic. Pl., t. 2410.
Yunnan. Mengtze, crevices of limestone precipices, 6400 ft. Hancock, 115.
2. *P. oblata*, Craib, sp. nov.

Herba nana, rhizomate brevi crasso. Folia oblata vel orbicularia, apice rotundata truncatave, basi truncata vel cordatula, usque ad 3 cm. diametro, ut videtur viva plus minusve carnosa,

pagina utraque pilis breviusculis subconspicuis conspersa, nervis lateralibus utrinque 3-4 obscuris vel subobscuris, margine ciliata, petiolo usque ad 4 cm. longo sparse piloso cito plus minusve glabrescente suffulta. Inflorescentia e floribus pluribus (usque ad 8) pedunculis 3.5-8.5 cm. longis medio brevi-bracteatis breviter albo-pilosulis saepe purpurascens singulatim gestis. Calyx dorso subglaber, sicco plus minusve purpurascens, in segmenta 5 lanceolata vel lineari-lanceolata apice breviter obtuse acuminate inter se subaequalia circa 3 mm. longa et 1 mm. lata trinervia vel 5-nervia et nervis marginalibus subconspicuis tantum nervis infra apicem summum concurrentibus partitus. Corollae tubus circa 2.5 mm. longus; limbus bilabiatus; labium posticum circa 6 mm. longum, bilobatum, lobis oblongis apice rotundatis vix 4 mm. longis 3 mm. latis ciliolatis, anticum 6-7 mm. longum, trilobatum, lobis oblongis vel elliptico-oblongis apice rotundatis ciliolatis mediano usque ad 6 mm. longo. Stamina fertilia duo, filamentis glabris 1.5 mm. longis, antheris 2.25 mm. longis apice emarginulatis, connectivo glabro. Ovarium 1.5 mm. altum, pilosum, stylo 6 mm. longo inferne incrassato et breviter piloso, stigmate parvo. Capsula straminea, 4-5 mm. longa.

S.W. Szechuan. Mu-li Mountains. Lat. $28^{\circ} 12' N$. Alt. 10,000 ft. G. Forrest, 16,859/b! Fl. Sept. 1918.

3. *P. nervosa*, Craib, sp. nov.

Herba nana, rhizomate brevi crasso. Folia erecta vel suberecta, quoad formam variabilia, obovata, elliptico-obovata, oblato-obovata, oblata vel rotundata, apice rotundata vel subrotundata, basi cuneata, rotundato-truncata vel cordata, usque ad 5.5 cm. longa et lata, viva carnosula, sicco chartaceo-membranacea, pagina superiore pilis transverse septatis flaccidis sat dense vel fere sparse instructa, inferiore ad costam nervosque pilosa, aliter sparsius pilosa, nervis lateralibus utrinque 3 supra obscuris subtus latis conspicuis, margine integra vel interdum crenulata, petiolo 3-4 cm. vel rarius usque ad 8 cm. longo piloso suffulta. Pedunculi numerosi, paulo supra medium parvi-bracteati, uniflori, rarius 2-3-flori, circa 6 cm. longi, longius albi-pilosi. Calyx dorso breviter pilosus, in segmenta 5 inter se subaequalia lanceolata vel lineari-lanceolata apice obtusiuscula 3-4 mm. longa 0.75-1 mm. lata interdum paucidentata ciliata trinervia partitus. Corollae tubus 2.5 mm. longus, limbus bilabiatus; labium posticum 7 mm. longum, paulo ultra medium bilobatum, lobis oblongis apice rotundatis ciliatis, anticum paulo ultra 6 mm. longum, trilobatum, lobis oblongis apice rotundatis circa 4.5 mm. longis ciliatis. Stamina fertilia duo, glabra, filamentis 1.5 mm. longis, antheris apice emarginulatis

2 mm. longis. Ovarium calyce parum brevius, pilosum, stylo 6 mm. longo inferne pilosulo, stigmatе parvo capitato. Capsula circa 5 mm. longa.

Yunnan. Yung-peh Mountains. Lat. $26^{\circ} 42'$ N. Alt. 8000–9000 ft. Dry stony pasture. Plant of 2–4 inches. Flowers blue; foliage fleshy. G. Forrest, 16,891! Fl. Sept. 1918.

Yung-peh Mountains. Lat. $26^{\circ} 42'$ N. Alt. 9000 ft. Open dry situations on rocks and cliffs. Plant of 3–4 inches. G. Forrest, 16,653! Fr. July 1918.

4. *P. flaccida*, Craib, sp. nov.

Herba nana, rhizomate brevi crasso. Folia oblata, rotundato-oblata vel fere rotundata, apice rotundata truncatave, basi cuneata vel acuminato-cuneata, usque ad 4.5 cm. longa et lata, viva carnosa, pagina utraque pilis sat longis albis transverse septatis flaccidis conspersa, nervis lateralibus utrinque 3–4 supra obscuris subtus subconspicuis, margine ciliata, integra vel rarius undulato-crenulata, petiolo usque ad 10 cm. sed saepissime 5–7 cm. longo piloso vel sparse piloso suffulta. Pedunculi numerosi, praesertim superne albo-pilosi, supra medium bracteis duabus parvis instructi, uniflori, saepissime 5–6 cm. alti. Calyx extra pilosus, in segmenta 5 lanceolata vel linearilanceolata apice obtusiuscula vel breviter obtuse acuminata inter se subaequalia 3–4 mm. longa 3–5-nervia ciliata partitus. Corollae tubus 2.5–3 mm. longus, limbus bilabiatus; labium posticum 6–7 mm. longum, ultra medium bilobatum lobis oblongis apice rotundatis ciliatis, anticum 7–7.5 mm. longum, fere ad basem trilobatum, lobis obovatis vel oblongo-obovatis apice rotundatis ciliatis. Stamina fertilia duo, glabra, filamentis 1.5 mm. longis, antheris 2.25 mm. longis apice emarginulatis. Ovarium calyce brevius, stylo 5 mm. longo inferne breviter piloso, stigmatе parvo. Capsula 5–6 mm. longa.

S.W. Szechuan. Mu-li Mountains. Lat. $28^{\circ} 12'$ N. Alt. 10,000 ft. Open dry pasture and on cliffs. Plant of 2–3 inches. Flowers blue. G. Forrest, 16,859/a! Fl. Sept. 1918.

5. *P. sinensis*, Oliver in Hook., Ic. Pl., xviii, t. 1716 (1887).

Hupeh. Ichang, Henry, 2321, 2921. Hupeh, Wilson, 2541!

6. *P. Henryi*, Craib in Notes Roy. Bot. Gard. Edin., x, p. 216 (1918).

P. minor, Hemsl. in Hook., Ic. Pl., xxvi, t. 2600 (1899), quoad pl. Henryanam.

Yunnan. Mengtze; cliffs in shade, 5000 ft. Single blue flowers. Henry, 9154!

7. *P. Forrestii*, Craib, sp. nov.

Folia in rosulam patulam primo densam 4-10 cm. diametro disposita, rarius suberecta, elliptica vel rhombeo-elliptica, rarius rotundata, apice obtusa vel rotundata, basi cuneata vel late cuneata, ad 3 cm. longa et 2.2 cm. lata, membranacea vel chartaceo-membranacea, supra iuventute sericea, mox pilosa, pilis sat longis transverse septatis, subtus pilis similibus sed parum brevioribus pilosa, nervis lateralibus utrinque circa 3 obscuris, margine ciliata, integra vel rarius pauci-crenata, petiolo sparse piloso ad 3 cm. longo suffulta. Pedunculi numerosi, breviter pilosi, supra medium bracteis duabus parvis instructi, uniflori. Calyx extra pilis albis brevibus plus minusve adpressis sat dense tectus, in segmenta 5 lineari-lanceolata apice acutiuscula inter se subaequalia vix ad 4 mm. longa basi 1 mm. lata longius ciliata nervis obscuris partitus. Corolla intus postice dense pilosa, antice sparse pilosa, tubo 4 mm. longo, limbo conspicue bilabiato; labium posticum circa 3.5 mm. longum, bene ultra medium bilobatum, lobis apice rotundatis ciliolatis, anticum 7 mm. longum, ad medium trilobatum, lobis late oblongis apice rotundatis ciliolatis. Stamina fertilia duo, glabra, filamentis 2 mm. longis ad medium flexis, antheris 1.75 mm. longis apice rotundatis vel leviter emarginatis. Ovarium villosum, in calyce bene inclusum, stylo 5.5 mm. longo inferne sparse pubescente, stigmatе parvo. Capsula circa 4 mm. longa.

Yunnan. Western flank of the Tali Range. Lat. 25° 40' N. Alt. 7000 ft. On shady rocks. Plant of 2-4 inches. Flowers light blue. G. Forrest, 15,561! Fl. July 1917.

8. *P. Cavaleriei*, Lévl. in Fedde Rep. Nov. Sp., ix, p. 329 (1911), pro parte; id. Fl. Kouy-Tcheou, p. 185, pro parte.

Kouy-Tcheou. Gan-pin. Martin et Bodinier, 1907! Fl. Oct. 1897 (type).

As the type of Lévillé's species I have taken the first specimen quoted in the original description. If we take the character of the pilosity of the lower part of the style where the hairs are very long, white, and spread at right angles to the style, then Cavalerie, 1898, from Tien-sen-kiao would also belong to *P. Cavaleriei*. Cavalerie, 837, however, from Long-ly does not show this character, and again the filaments are not glabrous. This collection I should refer to *P. Martinii*.

9. *P. barbata*, Craib, sp. nov.

Herba nana. Folia omnia basalia, suberecta, plus minusve rotundata vel ovata, rarissime ovato-lanceolata, apice rotundata obtusave, basi late cuneata, rotundata, cordatave, ad 2.5 cm.

longa et lata, membranacea, supra viridia, sublaxe flaccide pilosa, subtus pallidiora, ad costam nervosque laterales densius pilosa, aliter pilosa, nervis lateralibus utrinque 3-4 supra obscuris subtus saepe subconspicuis, margine crenata, ciliata, petiolo ad 6 cm. longo laxo piloso suffulta. Pedunculi ad 10 cm. longi, laxo pilosi, bene supra medium parvibracteati, uni- vel bi-flori. Calyx extra pilosus, in segmenta 5 inter se subaequalia, lanceolata vel lineari-lanceolata, circa 3 mm. longa et basi 1 mm. lata, ciliata, 3-nervia partitus. Corolla distincte bilabiata, postice 4 mm. longa, intra densius pilosa, antice 8.5 mm. longa, intra sparse pilosa, tubo 2.75 mm. longo; labium posticum ad medium bilobatum, lobis rotundatis ciliatis, anticum paulo ultra medium 3-lobatum, lobis ellipticis vel elliptico-obovatis apice rotundatis ciliatis. Stamina fertilia duo, glabra, filamentis basi curvatis 1.5 mm. longis, antheris 1-1.5 mm. longis. Ovarium breve, in calyce bene inclusum, stylo 4 mm. longo inferne longe barbato, stigmate parvo. Capsula circa 6 mm. longa.

Yunnan. Yunnan-sen, Maire, 2329!

10. **P. Kerrii**, Craib in Kew Bull., 1918, p. 365.

Siam. Doi Sutep, damp rocks in evergreen jungle, 1560 m., Kerr, 3361! Fl. Sept. 1914.

11. **P. Mairei**, Lévl. in Bull. Acad. Geogr. Bot., xii, p. 166 (1903).

Yunnan. Rochers des mont. à Tcha-ho, 2600 m., Fl. bleues. Maire, 89! et sine num.! Fl. Aug.

12. **P. minor**, Hemsl. in Hook., Ic. Pl., xxvi, t. 2600 (1899), pl. Henryana exclusa.

Yunnan. Mengtze, on rocks, 6000-7000 ft. Hancock, 428 (Herb. Kew!).

13. **P. Duclouxii**, Craib, sp. nov.

Herba nana, rhizomate brevi. Folia omnia basalia, sub-erecta, plus minusve rotundata vel ovato-rotundata, apice rotundata, basi saepissime cordata, saepissime 1-2 cm. longa et lata, chartacea, supra pilosa, subtus dense pilosa, nervis lateralibus utrinque 3-5 supra obscuris subtus interdum conspicuis, margine integra vel saepissime crenulata, petiolo sparse piloso usque ad 7.5 cm. longo suffulta. Pedunculi numerosi, uniflori, saepe purpurascens, sparse albo-pilosi, usque ad 10 cm. alti. Calyx dorso breviter pilosus, in segmenta 5 lanceolata vel lineari-lanceolata apice acutiuscula circa 3 mm. longa basi vix 1 mm. lata trinervia ciliata partitus. Corolla distincte bilabiata, postice 7.5 mm. longa, antice 13-15 mm. longa, tubo circa 4 mm.

longo ; labium posticum fere ad basem bilobatum, anticum vix ad medium trilobatum, lobis apice rotundatis ciliolatis. Filamenta recta, pilis capitatis brevibus densius furfuracea, vix 2 mm. longa, antheris 3 mm. longis. Ovarium calyce paulo brevius ; stylus 6 mm. longus, superne glaber, inferne sparse pubescens, stigmatibus parvis. Capsula circa 6 mm. longa.

Yunnan. Yunnan-sen—fissures des roches—montagne—fl. bleues. F. Ducloux, 548/906 ! Fl. June 1908 (type). Yunnan-sen, Maire, 230 ! 615 (Fl. May) ! 2/671 (Fl. June) ! 1349 !

14. *P. Martinii*, Lévl. in Fedde Rep. Nov. Sp., ix, p. 329 (1911).

P. Cavaleriei, Lévl., l.c., p. 329, pro parte.

Vaniotia Martinii, Lévl. in Bull. Acad. Geogr. Bot., xii, p. 166 (1903).

Kouy-Tcheou. Gan-pin, Martin et Bodinier, 2683 ! Fl. June 1899. Long-ly, Cavalerie, 837 !

15. *P. iodioides*, Hemsl. in Hook., Ic. Pl., xxvi, t. 2599 (1899).

Yunnan. Mengtze, N. mts., on cliffs in shade, 7000 ft. Henry, 10,259 !